

PDDAXLQUE DX-LR30-432M22S

PDDAXLQUE DX-LR30 Semtech SX1262 LoRa SPI Interface Module Instruction Manual

Model: DX-LR30-432M22S | Brand: PDDAXLQUE

1. INTRODUCTION

The PDDAXLQUE DX-LR30 is a high-performance, low-power LoRa RF transceiver module designed for long-range, low-power IoT applications. It features the Semtech SX1262 chip, offering superior performance, extended transmission distance, faster data rates, and reduced power consumption compared to previous generations. This module supports a frequency band of 410-475MHz and provides a transmission power of 22 dBm, enabling communication distances of up to 8 kilometers. It is compatible with STM32 microcontrollers and supports LoRaWAN and Meshtastic protocols, making it suitable for a wide range of industrial and smart home applications. This manual provides essential information for the proper setup, operation, and verification of your DX-LR30 module.

2. KEY FEATURES

- **Long-Range Transmission:** Achieves communication distances of up to 8 kilometers.
- **Advanced Chipset:** Integrates the Semtech SX1262 chip, offering enhanced performance, longer range, faster speed, and lower power consumption compared to SX1278/SX1276 solutions.
- **Frequency Band:** Operates within the 410-475MHz global Sub-GHz band.
- **High Power Output:** Maximum transmit power up to +22dBm.
- **Low Power Consumption:** Receiver sensitivity as low as -148dBm (LoRa mode), receive current only 4.2mA, and sleep current as low as 0.9μA.
- **Modulation Support:** Supports LoRa and (G)FSK modulation.
- **Interface:** Features an SPI interface for programming and firmware development.
- **Antenna Compatibility:** Compatible with various antenna interfaces including stamp hole/round hole and IPEX, supporting diverse antenna selections.
- **Robust Design:** Equipped with professional RF shielding for effective blocking of external EMI and electrostatic interference, ensuring dustproof, ESD protected, and EMI resistant operation.
- **Certifications:** Possesses complete CE/FCC certifications for reliability and safety.

LR30-433M22S Key Features

- Semtech SX1262 chip
- Supports LoRa® and (G)FSK modulation
- Frequency range covers 430~470MHz global Sub-GHz band
- Maximum transmit power up to +22dBm
- Receiver sensitivity as low as -148dBm (LoRa® mode)
- Receive current only 4.2mA, sleep current as low as 0.9μA
- Supports SPI communication interface.
- Compatible with various antenna interface:
stamp hole/round hole and IPEX,
supports more scheme selection.
- Visible open distance up to 8KM
- Working temperature: -40°C ~ +85 °C
- Complete developer profile
- Module Size 20(L)mm x14(W)mm x 2.3(H)mm
- Shield Protection Antistatic & Dustproof

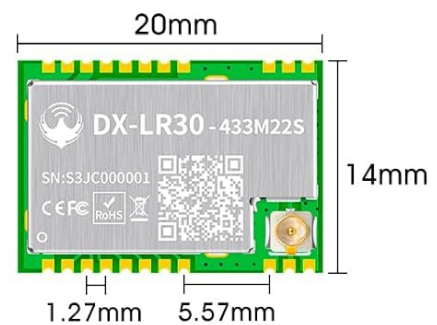


Image 2.1: Key features of the DX-LR30 module, highlighting its technical specifications and capabilities.

SEMTECH SX1262 chip

SX1262 is a high-performance, low-power LoRa® RF transceiver chip, suitable for long-range, low-power IoT applications. It is widely used in LoRa® communication, agricultural monitoring, and similar scenarios.



Better performance

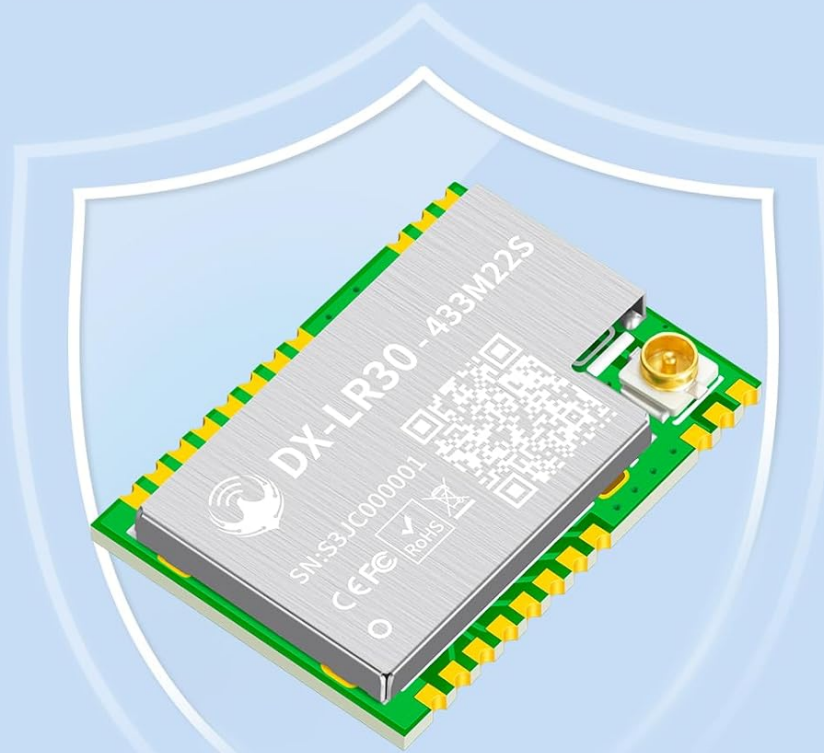
SX1262 *VS* **SX1278/SX1276**

	SX1262	SX1278/SX1276
Distance	 >8km	8km
Rate(LoRa)	 0.018–62.5 kbps	0.3k-19.2kbps
Sleep Power Consumption	 0.9 μ A	5 μ A

Image 2.2: Performance comparison between the Semtech SX1262 chip (used in DX-LR30) and older SX1278/SX1276 chips, demonstrating superior distance, data rate, and power efficiency.

Industrial grade product quality

Equipped with professional RF shielding to effectively block external EMI and electrostatic interference.




Dustproof


-40~+85 °C


ESD protected


EMI resistant

Image 2.3: Illustration of the industrial-grade quality of the DX-LR30 module, emphasizing its robust design with RF shielding, dustproof, ESD protection, and EMI resistance.

3. WHAT'S IN THE BOX

Your package contains the following items:

- 4 x PDDAXLQUE DX-LR30 Semtech SX1262 LoRa SPI Interface Modules

For initial setup and verification, a compatible development board (such as the PJ26 microcontroller shown in the verification video), antennas, and USB cables are typically required. These items are usually part of a separate development kit and are not included with the standalone module package.

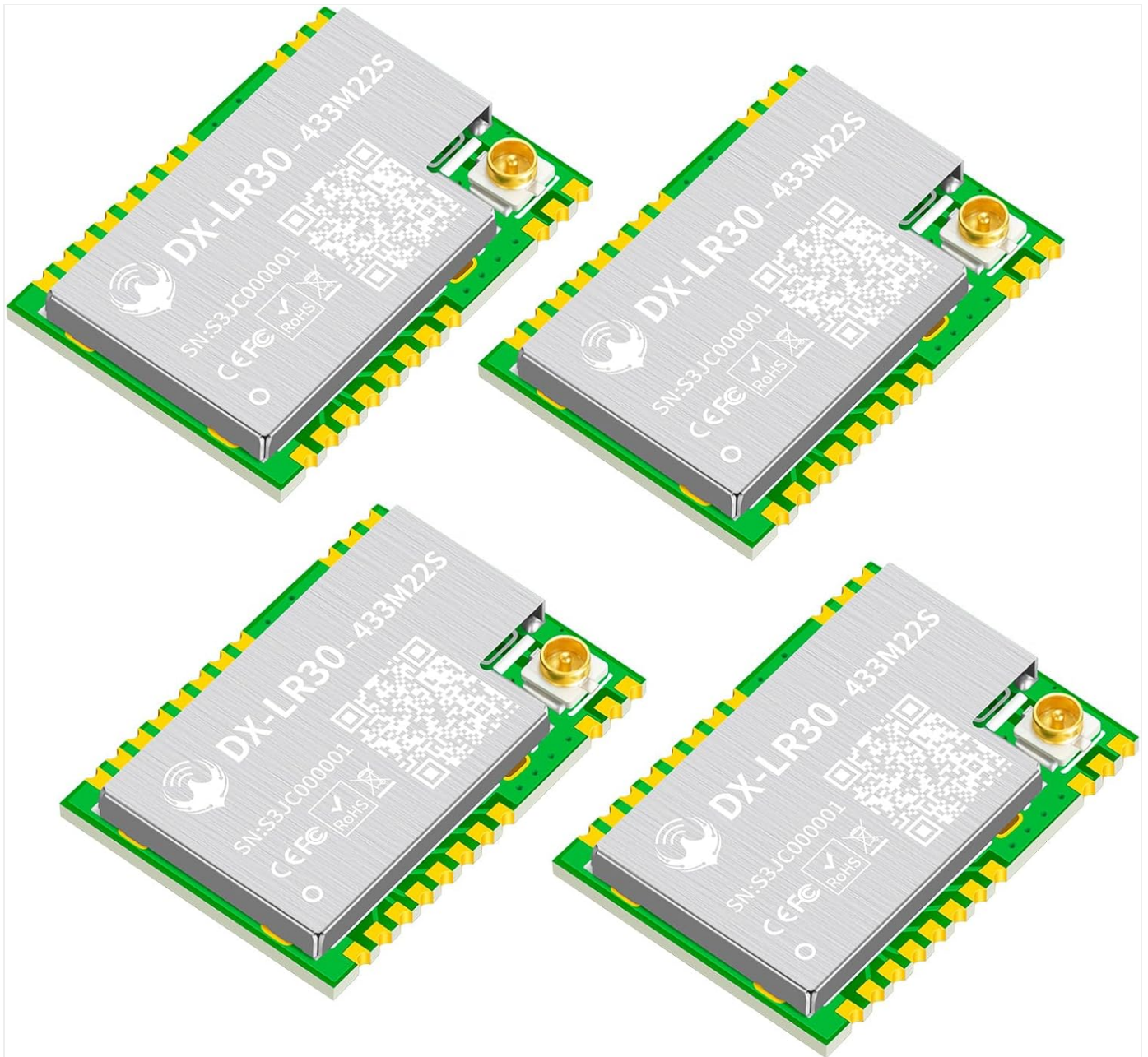


Image 3.1: Four PDDAXLQUE DX-LR30 Semtech SX1262 LoRa SPI Interface Modules.

4. SETUP AND INITIAL VERIFICATION

This section guides you through the initial setup and verification process for the DX-LR30 module, typically performed using a development board and a PC. Refer to the official product verification tutorial video for a visual guide.

4.1. Important Safety Note: Antenna Connection

Before powering on the module, it is crucial to connect an appropriate antenna. Operating the module without an antenna can prevent the radio frequency power from being properly dissipated, which may cause damage to the internal circuitry of the module.

1. Carefully attach the antenna to the module's antenna connector.
2. Ensure a secure connection before proceeding to power the device.

4.2. Driver Installation (Windows)

This feature has been verified on Windows 7 through Windows 11 systems. If you are using another operating system (such as macOS or Linux), please seek alternative tools or methods for driver installation.

1. Download the necessary drivers (e.g., CH340 Driver) from the official DX-SMART website or the provided Google Drive link

(refer to Section 10 for links).

2. Locate and run the driver installation executable (e.g., CH341SER drive.EXE).
3. Follow the on-screen prompts to complete the installation. If the driver is already installed, you may skip this step.

4.3. Powering On

1. Connect the module (mounted on a development board) to your computer using a USB cable.
2. Upon successful power-on, the power indicator LED on the module/development board will illuminate red.

4.4. Configure the Serial Tool (UartAssist)

1. Download the serial debugging tool (e.g., UartAssist.exe) from the official DX-SMART website or Google Drive.
2. Run the UartAssist.exe application.
3. In the tool, select the corresponding serial port (COM port) for your connected module.
4. Set the baud rate to **9600**.
5. Click the "Open port" button.

4.5. Module Verification

1. After opening the serial port, press the "Reset" button on the development board connected to the module.
2. The debugging tool should then receive raw information from the module, indicating successful communication.
3. Once information is received, the modules can communicate with each other, confirming successful verification.

Your browser does not support the video tag.

Video 4.1: DX-LR20/30 Product Quick Verification Tutorial. This video demonstrates the unboxing, USB to TTL wiring, serial tool test, and basic communication verification for the DX-LR20/LR30 modules using a development kit.

5. OPERATING INSTRUCTIONS

The DX-LR30 module operates via an SPI interface and requires custom firmware development for specific applications. Once the module is verified as per Section 4, you can proceed with developing and uploading your application-specific firmware.

- **Firmware Development:** Utilize the provided technical documentation, AT command set, and reference design schematics available on the DX-SMART official website or Google Drive to develop your firmware.
- **Programming:** Use a compatible microcontroller (e.g., STM32) and programming tools to flash your developed firmware onto the DX-LR30 module.
- **Communication:** The module supports LoRaWAN and Meshtastic protocols, allowing for flexible integration into various IoT networks.

Detailed programming guides and examples are available in the technical documentation package.

6. APPLICATION AREAS

The DX-LR30 module is versatile and suitable for a wide range of applications requiring long-range, low-power wireless communication:

- Home security alarm and remote keyless entry systems.
- Smart home and industrial sensor networks.
- Wireless alarm security systems.
- Building automation solutions.

- Industrial wireless remote control.
- Advanced Metering Infrastructure (AMI).
- Automotive industry applications.

8KM REMOTE TRANSMISSION



WE ARE FACTORY



[Technical Support & Customized Service]

We are a manufacturer, Not a trader. This is a product we developed and designed ourselves. Please believe in our ability and technology.

We can help you solve the problems you meet, and also support OEM and ODM services (Including customized logo, customized program, customized appearance, etc.).

Image 6.1: Example application of 8KM remote transmission using the LR30 module in intelligent agriculture.

7. TECHNICAL SPECIFICATIONS

Attribute	Value
Brand	PDDAXLQUE
Model Number	DX-LR30-432M22S
Chipset	Semtech SX1262
Frequency Band	410-475MHz

Transmission Power	Up to 22 dBm
Communication Distance	Up to 8 KM (line of sight)
Interface	SPI
Crystal Frequency	32Mhz
IO Port Voltage Compatibility	3.3V ~ 5V (TTL level output)
Operating Temperature	-40°C to +85°C
Certifications	CEFCC

8. MAINTENANCE

The DX-LR30 module is designed for robust and reliable operation with minimal maintenance. To ensure optimal performance and longevity:

- **Environmental Conditions:** Operate the module within the specified temperature range (-40°C to +85°C) and avoid exposure to excessive moisture or corrosive environments.
- **Physical Protection:** The module features RF shielding, anti-static, and EMC electromagnetic compatibility. Avoid physical impact or bending of the module.
- **Firmware Updates:** Regularly check the manufacturer's official website for any firmware updates that may improve performance or add new features.
- **Cleaning:** If necessary, gently clean the module with a dry, soft cloth. Avoid using liquids or abrasive cleaners.

9. TROUBLESHOOTING

If you encounter issues with your DX-LR30 module, consider the following common troubleshooting steps:

- **No Power Indicator:** Ensure the module is correctly connected to a power source (e.g., USB via development board) and the cable is functional.
- **No Communication via Serial Tool:**
 - Verify that the CH340 driver is correctly installed (refer to Section 4.2).
 - Check if the correct COM port is selected in UartAssist.
 - Confirm the baud rate is set to 9600.
 - Ensure the antenna is securely connected before powering on.
 - Try pressing the "Reset" button on the development board after opening the serial port.
- **Poor Transmission Range:**
 - Ensure the antenna is properly connected and suitable for the operating frequency.
 - Check for obstructions between transmitting and receiving modules.
 - Verify power supply stability.
- **Module Damage:** If the module was powered on without an antenna, internal circuitry damage may have occurred. Contact technical support if you suspect hardware damage.

For more complex issues, refer to the detailed technical documentation available on the official website or contact technical support.

10. WARRANTY AND SUPPORT

PDDAXLQUE, as the manufacturer, provides comprehensive technical support for the DX-LR30 module. We are committed to assisting you with any questions or issues you may encounter during development and operation.

- **Technical Documentation:** Access complete technical documents, AT command sets, module package diagrams, reference design schematics, and development/testing tools via the official DX-SMART website or Google Drive.
- **Official Website:** en.szdx-smart.com
- **Google Drive for Resources:** [Google Drive Link](#)
- **Direct Support:** If you have any questions or require assistance, please contact our technical support team. We also support OEM and ODM services.

Please refer to your purchase documentation for specific warranty terms and conditions.

